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THE STATUS OF ~~TRYPOXYLON~~ *FIGULUS*
(LINNAEUS, 1758), *MEDIUM* DE BEAUMONT,
1945, AND *MINUS* DE BEAUMONT, 1945
(HYMENOPTERA: SPHECIDAE)

By

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ABSTRACT: *Trypoxylon figulus* (Linnaeus, 1758), *medium* de Beaumont, 1945, and *minus* de Beaumont, 1945, currently confused under the name *figulus*, are separated on the basis of newly discovered characters. *T. majus* Kohl, 1883, *figulus barbarum* de Beaumont, 1957, and *figulus yezo* Tsuneki, 1956, are newly synonymized with *figulus*, and *figulus koma* Tsuneki, 1956 is newly synonymized with *minus*. Neotypes are designated for *Sphex fuliginosus* Scopoli, 1763, and *Trypoxylon majus* Kohl, 1883, both synonyms of *figulus*, and a lectotype is designated for *Trypoxylon rubi* Wolf, 1959, a synonym of *medium*.

INTRODUCTION

De Beaumont (1945) was first to observe that *Trypoxylon figulus* of European authors actually consisted of three phena. Their status has been controversial over the years. De Beaumont (1945, 1964a) and Richards (1980) called them varieties, Blüthgen (1951) gave them species rank, and Wolf (1959) and Bohart and Menke (1976) treated them as subspecies. The last interpretation is untenable, since the three phena are largely sympatric. Tsuneki (1981) regarded *medium* as a good species, characterized by both external and genitalic characters, and considered *minus* as a simple form of *figulus*.

According to Valkeila (1961), specimens reared from one nest mostly are one phenon, but he reported that two phena (e.g., *majus* and *minus*) are found in some nests. He concluded that all three are individual variants of one species. Unfortunately, Valkeila's data cannot be verified. I have examined all of his specimens, which are

presently kept at Helsinki University. Some specimens have identification labels by de Beaumont, but not a single label refers to nests or cells from which specimens were reared. Possibly Valkeila misidentified some specimens, but this cannot be determined because his identification labels give the name *figulus* only, without reference to form or varietal names. Another possible explanation is that offspring of two nests were accidentally confused.

A thorough examination of the three phena, based on more than 3800 specimens from many countries, convinced me that actually they are good species. My opinion is based on the following evidence:

1. Morphology. Although some males of *figulus* and *minus* cannot be distinguished with certainty, females are separated by structural gaps and do not intergrade; also the male of *medium* is easily recognized by its peculiar gonoforceps. Some previously unnoticed characters (antero-

ventral mesothoracic process, length of thoracic vestiture, female hindcoxa pit) are especially helpful in recognizing the three species.

2. Rearing. Of 91 specimens reared from trap nests in Liège, Belgium, by A. Jacob-Remacle, and examined by me, all are *minus* (7 ♀, 5 ♂ reared in 1976, 44 ♀, 35 ♂ reared in 1981). This result contradicts Valkeila's conclusions: If the three phenotypes really are variants of one species, then one would expect some variation of phenotypes in the Liège trap nest material.

3. Geographic distribution. All three species are largely sympatric, but only *figulus* and *medium* have been found in Great Britain, only *figulus* and *minus* in the Iberian Peninsula, and only *figulus* in North Africa and North America. If the three phenotypes were just individual forms of one species, some variation should have occurred in North American populations, and all three phenotypes should have been observed in Great Britain (all three do occur in the Netherlands, where climatic and ecological conditions are practically identical to those in England).

4. Habitat preference. Of 429 specimens collected by J. Leclercq in waterbowl traps in Liège, Belgium, in 1980 and 1981 (and examined by me), 4 are *medium* and the remainder are *minus* (202 ♀, 223 ♂). Not a single *figulus* was trapped, in spite of the fact that this species is common in Belgium.

I fully agree with Tsuneki (1981) that some of the previously used characters are not reliable. For example, the mesopleural punctures of *figulus* are dense and well defined according to de Beaumont (1945, 1964a), but in the smallest males they actually are as sparse and minute as in most *minus*. Such characters have not been used here.

Proper mounting is critical for studying the species considered. For example, the anteroventral mesothoracic region must not be damaged by the pin. When pinning the specimens, one should insert the pin so that it passes through the membrane between the mesothorax and forecoxae (which then extend laterad). In this position, the anteroventral mesothoracic region is easily visible. Unfortunately, many European collectors mount their specimens on cardboard rectangles with glue or minutiae (venter down rather than on a side), and such specimens must be relaxed and remounted before examination.

In the text below the locality records are ar-

ranged according to current administrative divisions for each country except Sweden and Finland, for which biogeographic provinces have been used. Localities given on specimen labels but not found on available maps or in gazetteers have not been considered.

An exclamation mark preceding the word *Holotype* or *Neotype* in the bibliographic citations indicates that the type has been examined.

SOURCES OF MATERIAL

The specimens examined came from institutional and private collections listed below. The acronyms preceding the names are the abbreviations by which these collections are referred to in the text.

- AKM: Aimo K. Merisuo, Turku, Finland
- AWE: Father Andreas W. Ebmer, Linz, Austria
- BB: Padre Bruno Bonelli, Cavalese, Italy
- BMNH: British Museum (Natural History), London, England (Mr. C. R. Vardy)
- CAS: California Academy of Sciences, San Francisco, California (W. J. Pulawski)
- CNC: Canada National Collection of Insects, Arachnids and Nematods, Biosystematics Research Institute, Ottawa, Ontario
- CU: Cornell University, Department of Entomology and Limnology, Ithaca, New York (Dr. L. L. Pechuman)
- DBB: Major Donald B. Baker, Ewell, Surrey, England
- DEI: Institut für Pflanzenschutzforschung der Akademie der Landwirtschaftswissenschaften der DDR, Zweigstelle Eberswalde, Abteilung Taxonomie der Insekten (formerly Deutsches Entomologisches Institut), Eberswalde-Finow (Dr. J. Oehlke)
- FIS: Forschungsinstitut Senckenberg, Frankfurt am Main, Federal Republic of Germany (Dr. J.-P. Kopelke)
- FJS: Señor Francisco J. Suárez, Almería, Spain
- FSAG: Faculté de Sciences Agronomiques, Gembloux, Belgium (Dr. J. Leclercq)
- GP: Signor Guido Pagliano, Turin, Italy
- GVR: Mr. Gerard van Rossem, Wageningen, The Netherlands
- HD: Dr. Holger Dathe, Forschungsstelle für Wirbeltierforschung, Berlin, German Democratic Republic
- HW: Herr Heinrich Wolf, Plettenberg, Federal Republic of Germany
- HY: Helsingin Yliopisto (=University of Helsinki), Department of Agricultural and Forest Zoology, Finland, including E. Valkeila collection (Dr. Martti Koponen)
- IEE: Instituto Español de Entomología, Madrid, Spain (Dr. E. Mingo Perez)
- JG: Dr. Joseph Gusenleitner, Linz, Austria
- KMG: Mr. Kenneth M. Guichard, % British Museum (Natural History), London, England
- KS: Professor Dr. Konrad Schmidt, Zoologisches Institut der Universität, Karlsruhe, Federal Republic of Germany
- KT: Professor Katsui Tsuneki, Mishima, Japan
- LEM: Lyman Entomological Museum & Research Laboratory, Ste. Anne de Bellevue, Quebec, Canada (Dr. A. Finnamore)
- MGA: Muzeul de Istorie Naturala Grigore Antipa, Bucharest, Rumania (Mrs. X. Scobiola Palade)

TABLE 1. ANCESTRAL AND DERIVED CHARACTER STATES OF THREE SPECIES IN THE GENUS *TRYPOXYLON*.

Character	Ancestral	Derived
1. Thoracic pilosity	shorter (as in <i>medium</i>)	longer (as in <i>figulus</i>)
2. Anteroventral mesothoracic process	absent	present
3. Free margin of female clypeus	straight or sinuate	concave
4. Female hindcoxal pit	circular	oblong
5. Sete of hindcoxal pit	evenly distributed	channel-like structure
6. Male apical flagellomere	shorter (as in <i>medium</i>)	longer (as in <i>figulus</i>)
7. Gonoforceps process	absent	present

MHNG: Muséum d'Histoire Naturelle de Genève, Switzerland (Dr. Cl. Besuchet)

MSNM: Museo Civico di Storia Naturale, Milano, Italy (Dr. C. Leonardi)

MCZ: Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts

NHMB: Naturhistorisches Museum Bern, Bern, Switzerland (Dr. H. D. Volkart)

NHMV: Naturhistorisches Museum, Vienna, Austria (Dr. M. Fischer)

NRS: Naturhistoriska Riksmuseet, Stockholm V, Sweden (Mr. S. Erlandsson)

RMNH: Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands, including collections of J. P. van Lith and P. M. F. Verhoeff (Dr. K. van Achterberg)

SFG: Dr. Severiano Fernandez Gayubo, Departamento de Zoología, Universidad de Salamanca, Spain

SMT: Staatliches Museum für Tierkunde, Dresden, German Democratic Republic (Dr. Regine Eck)

TMB: Természettudományi Múzeum, Budapest, Hungary (Dr. J. Papp)

TN: Mr. Toshiaki Nambu, Yorii-machi, Saitama Prefecture, Japan

USNM: United States National Museum (Smithsonian Institution), Washington, D.C.

VH: Dr. Volk Haeseler, Universität Oldenburg, Oldenburg, Federal Republic of Germany

VLK: Dr. Vladimir L. Kazenas, Zoological Institute, Kazakh Academy of Sciences, Alma Ata, USSR

WJP: Wojciech J. Pulawski, San Francisco, California

WSU: Washington State University, Department of Entomology, Pullman, Washington

ZMB: Museum für Naturkunde an der Humboldt Universität zu Berlin, German Democratic Republic (Dr. F. Koch)

ZMH: Zoologisches Institut und Zoologisches Museum der Universität Hamburg, Federal Republic of Germany (Dr. R. Abraham)

ZMK: Zoological Museum, Copenhagen, Denmark (Dr. O. Lomholdt)

ZMMU: Zoological Museum, Moscow State University, Moscow, USSR (Dr. L. V. Zimina, via Dr. A. P. Rasnitsyn)

ZMUB: Zoological Museum, University of Bergen, Norway (Dr. Lita Greve Jensen)

ZSM: Zoologische Staatssammlung München, Federal Republic of Germany (Dr. E. Diller)

ACKNOWLEDGMENTS

Study of the Linnean type of *Sphex figulus* at the Burlington House, London, was possible ow-

ing to the kind assistance of Michael C. Day of the British Museum (Natural History). North American specimens of *figulus* belonging to various U.S. and Canadian institutions listed above (except for LEM) were kindly forwarded by Rolin C. Coville, University of California, Berkeley, who had them on loan. Arnold S. Menke and Eric E. Grissell critically reviewed the manuscript and made many valuable suggestions. David H. Kavanaugh commented on the phylogenetic trees. Mary Ann Tenorio drew the phylogenetic schemes and distributional maps, and Donald J. Becker took the photographs with a Hitachi S-520 scanning electron microscope.

PHYLOGENETIC RELATIONSHIPS

Reconstructing phyletic relationships between three isolated species of a large genus like *Trypoxylon* is precarious, because polarities of morphological transformations can easily be misinterpreted. With this restriction in mind, I nevertheless think it worthwhile to analyze the relationships between *figulus*, *medium*, and *minus*. Their ancestral and derived character states, based on outgroup comparisons, are shown in Table 1.

Based on the above table, the three possible phylogenetic trees (only dichotomic trees are considered) are as shown in Fig. 1. Tree B is the most probable, since no single derived character state is shared by any two of the three species in the schemes A and C. Furthermore, trees A and C imply a parallel development of the elongate male flagellomere XI in *figulus* and *minus*, an unlikely event.

KEY TO THE SPECIES

1. Female: clypeal free margin evenly concave between orbit and median projection (Fig. 7A); mesopleural setae around scrobe shorter than midocellar diameter; hindcox-

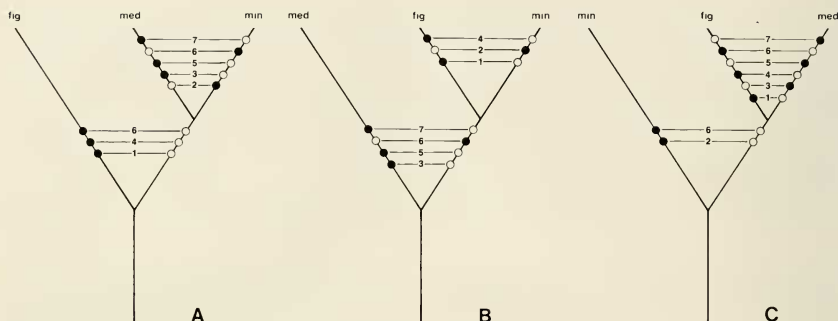


FIGURE 1. Hypothetical phylogenetic trees of *Trypoxylon* *figulus* (fig), *medium* (med), et *minus* (min). Open circles: generalized character states. Solid circles: derived character states. Numbers refer to characters listed on p. 125.

al pit nearly circular, its setae forming peculiar, channel-like structure (Fig. 7B-D). Male: maximum length of flagellomere X 0.75–0.9 times its width; maximum length of flagellomere XI generally 2.0–2.2 times its basal diameter (occasionally 2.4 times); gonoforceps with exteroventral expansion at about midlength (Fig. 7E, F)

medium de Beaumont

- Female: clypeal free margin (Fig. 2A, 5A) sinuate to nearly straight, except concave in occasional western European *figulus* in which mesopleural setae around scrobe are generally longer than midocellar diameter, and hindcoxal pit is generally oblong; setae of hindcoxal pit not forming channel-like structure. Male: maximum length of flagellomere X 0.5–0.8 its width; maximum length of flagellomere XI 2.2–3.6 times its basal diameter; gonoforceps not expanded exteroventrally (Fig. 2E, F)

2. Mesothorax without anteroventral process¹; mesopleural setae around scrobe in most specimens longer than midocellar diameter (shorter in some individuals). Female: clypeal free margin sinuate between lobe and orbit (Fig. 2A), hindcoxal pit oblong (Fig.

2B-D) or (some specimens) circular, evanescent in Japanese specimens

figulus (Linnaeus)

- Mesothorax with anteroventral process (Fig. 5B, C) in more than 95% of specimens; mesopleural setae around scrobe shorter than midocellar diameter. Female: clypeal free margin almost straight between lobe and orbit (Fig. 5A), hindcoxal pit circular (Fig. 5D-F)

minus (de Beaumont)

Trypoxylon *figulus* (Linnaeus)

Sphex *figulus* LINNAEUS, 1758:570. ! Holotype: ♀, Sweden, Uppsala (Linnean Society, London). — DAY, 1979:62. — In *Trypoxylon*: LATREILLE, 1802:79; TSUNEKI, 1981:15 (redescription, geographic variation). — In *Apius*: JURINE, 1807:142.

Sphex *fuliginosus* SCOPOLI, 1763:292 (as *fuliginosa*, incorrect original spelling). Holotype or syntypes: Carniola (formerly in Austria, since 1919 part of Italy and Yugoslavia), lost, see ROGENHOFFER UND DALLA TORRE, 1882:599. ! Neotype: ♀, Austria: "Carinthia, Ostkarawanken, Ebriach, 580–750 m, 21–29. VII.1964, G. van Rossem," present designation (CAS). — As probable synonym of *figulus*: VANDER LINDEN, 1829:42. — As synonym of *figulus*: subsequent authors.

Trypoxylon *figulus* var. *majus* KOHL, 1883:657, ♀, ♂ (as *major*, incorrect original spelling). Holotype or syntypes: ♀, Switzerland: no specific locality (originally NHMV, Vienna, now lost). ! Neotype: ♀, Switzerland, "P. 3 VIII 84" and "Cn. Tournier" (=Peney near Geneva, collection Tournier), present designation (MHNG). **New synonym.** — DE BEAUMONT, 1945:477 (var. *major*); BLÜTHGEN, 1951:234 (var. *major*); DE BEAUMONT, 1958:206 (forma *major*), 1959:30 (same); WOLF, 1959:15, 16 (*figulus* *major*); VALKEILA, 1961:244 (var. *major*); DE BEAUMONT, 1964a:290, 1964b:84 (forma *major*), 1965:56 (same), 1967:338 (same); BOHART AND MENKE, 1976:346 (ssp. *major*); LOMHOLDT, 1976:267 (*figulus* *major*); RICHARDS, 1980:45 (var. *major*).

Trypoxylon *apicale* W. FOX, 1891:142, ♀ (as *apicalis*, incorrect

¹ In occasional males the anteroventral mesothoracic process is absent and the mesopleural setae are shorter than the midocellar diameter. Such specimens can be either *figulus* with unusually short mesopleural setae, or *minus* without mesothoracic process. I cannot find characters for distinguishing them.

original spelling). Lectotype: ♀, Canada (ANSP, Philadelphia), designated by CRESSON, 1928:52. — SANDHOUSE, 1940: 156 (apicalae). Synonymized by PATE, 1943:16.

Trypoxylon figulus barbarum DE BEAUMONT, 1957: ♀, ♂. Holotype: ♂, Morocco: Marrakech (Mus. Zool. Lausanne). New synonym. — BOHART AND MENKE, 1976:346.

Trypoxylon figulus yezo TSUNEKI, 1956:29, ♀, ♂. Holotype: ♀, Japan: Hokkaido [=Yezo]: Jozankei (K. Tsuneki collection, Mishima). New synonym. — BOHART AND MENKE, 1976: 346; TSUNEKI, 1981:21 (summary of faunistic data).

Trypoxylon fieuzeti GINER MARI, 1959:389, ♂, ! Holotype: ♂, Morocco: Fez (IEE, Madrid). Synonymized with *figulus barbarum* by SUÁREZ, in GINER MARI, 1959:400.

COMMENTS ON NEW SYNONYMS.—*T. figulus barbarum* was based mainly on the elongate male flagellomere XI. Because flagellomere XI varies in length (see Geographic Variation below) this subspecies is not recognized here. I also feel that a formal name for the Japanese populations (*figulus yezo*) is unwarranted on morphological or other grounds.

COMMENTS ON NEOTYPES.—The identity of *Spheg fuliginosus* has never been satisfactorily established, because the original description is inadequate and the original material is lost (Rogenhofer und Dalla Torre, 1882). Consequently, the name can only be defined by designation of a neotype. In selecting a specimen of *Trypoxylon figulus* as a neotype of *Spheg fuliginosus* I have followed the traditional interpretation of the last name.

The original material of *Trypoxylon majus* cannot be found in the Vienna Museum (Dr. M. Fischer's letter of 21 October 1982) and must be lost. However, this name indicates a large body size, and *figulus* averages larger than either *medium* or *minus*. A neotype of *majus* has also been designated.

DIAGNOSIS.—Most specimens of *figulus* differ from *medium* and *minus* in having the mesopleural setae around the scrobe slightly longer than the midocellar diameter. However, the setae length is slightly less than this diameter in some specimens from southern France and the Iberian Peninsula (as they are in the other two species). The anteroventral mesothoracic carina is sinuate, curved posterad mesally, but unlike most *minus* it has no process. The free margin of the female clypeus (Fig. 2A) is usually sinuate between orbit and the median projection (free margin concave in *medium*, almost straight in *minus*). However, the free margin is almost evenly concave in certain specimens from Spain (almost like *medium*, which is unknown from Spain), in

a specimen from Zirbelwald, Austria, and one from Balderschwang, Federal Germany. The female hindcoaxal pit is mostly oblong (Fig. 2B–D) in western palearctic specimens, but occasionally it is nearly circular, as in *medium* and *minus*; it is evanescent in Japanese females. In the male, the maximum length of flagellomere X equals 0.65–0.8 of its width (the lowest ratios are observed in specimens in which flagellomere XI is short, and vice versa); the maximum length of flagellomere XI usually is 2.4–3.6 times the basal diameter instead of 2.0–2.2 in most *medium*, but only 2.2 times in occasional specimens (which differ from *medium* in having a longer mesopleural vestiture and a shorter flagellomere X). Body length 9–12 mm in female, 7.5–10 mm in male.

GEOGRAPHIC VARIATION.—In most males (including the two males seen from Portugal), the maximum length of flagellomere XI equals 2.4–2.7 times its basal diameter, but in occasional specimens it is only 2.2 times (e.g., in a male from Wachseidornmoos, Switzerland); it is 2.7–3.2 times its basal diameter in Spanish individuals, and 3.3–3.6 times in Moroccan individuals.

LIFE HISTORY.—Many specimens of *figulus* (voucher specimens examined by me) were reared from nests established in wood (Wolf, 1959). Six females and 17 males examined were reared by O. Lomholdt from nests in reed stems which had been used for thatching roofs at Tisvilde Hegn, Denmark.

GEOGRAPHIC DISTRIBUTION (Figs. 3, 4).—Most of the Palearctic Region between Great Britain and Japan, and also eastern North America (eastern Canada and northeastern USA).

RECORDS (Old World).—Algeria (1 ♂): El Harrach (as Maison Carrée, apical flagellomeres missing, BMNH).

Austria: (102 ♀, 50 ♂, NHMV if not indicated otherwise): Kärnten: Aflritzer See (WJP), Ebene Reichenau (RMNH), Ebriach in Ostkarawanken (WJP), Eisenkappel, Mallnitz (ZMB), Mauthen (ZMB), Nötsch, Waidisch bei Ferlach (FSAG, JG). Niederösterreich: Bisamberg near Vienna (NHMV, CU), Bucklige Welt S Vienna, Brühl, Dornbach (CAS, NHMV), Eichkogel near Vienna (RMNH), Guntramsdorf (DEI), Hainbach (FSAG), Hainburg an der Donau (ZMB), Herzogenburg, Herzogsdorf (JG), Kalksburg near Vienna, Krumbach, Lobau near Vienna (NHMV, ZMH), Marchfeld (ZMB), Mistelbach (ZMH), Mödling (ZMH), Oberweiden (DBB), Piesting, Purk (W Krems), Rappendorf bei Molk (AWE), Roggendorf bei Melk (JG), Rohr im Gebirge, Schneeberg, Stillfried (ZMH), Traismauer, Weidlingsbach (ZMH), Wien (NHMV, FSAG, ZMH) including Donauauen, Kahlenberg and Türkenschanze. Oberösterreich: Frauenstein (JG), Gemeinde Reichenthal (AWE), Gutau (FSAG, JG), Hofkirchen (FSAG), Innerbreitenau (FSAG, JG), Kalten-

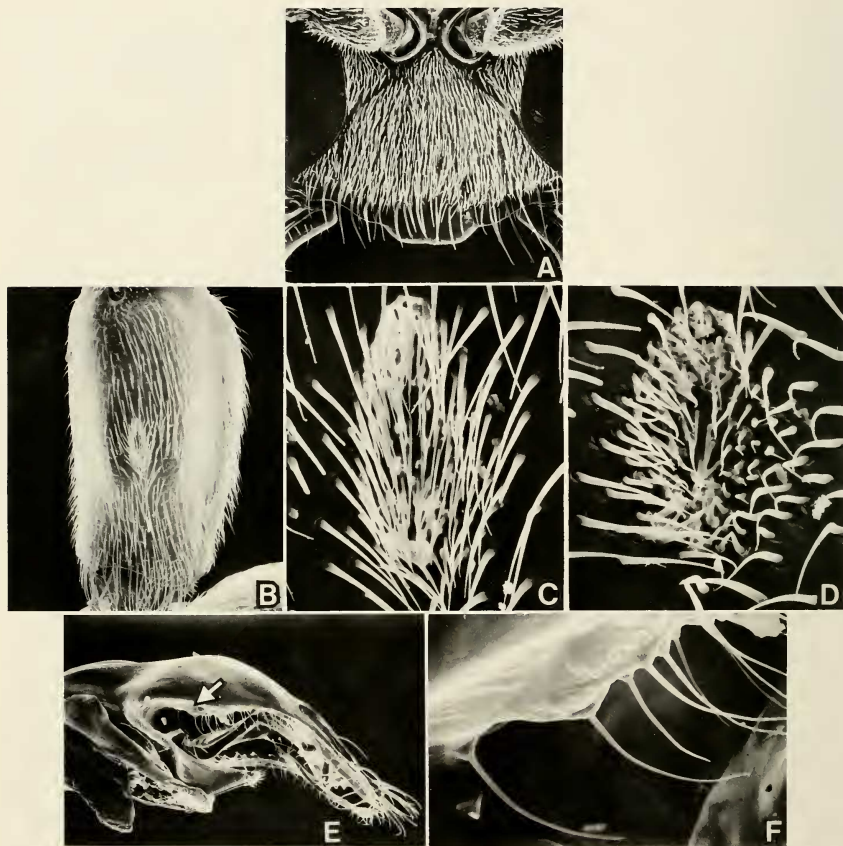


FIGURE 2. *Trypoxylon figulus*: A—female clypeus, B—female hindcoxa ventrally, C—female hindcoxal pit, vertical view, D—same, oblique view, E—male genitalia (arrow: area shown in F). F—same, portion of gonoforceps.

berg (AWE), Linz (HY, NHMV), Molln, Mühlviertel (JG), Neumarkt (JG), Oberwallsee bei Müllachen (JG), Riedegg bei Gallneukirchen (JG), Sankt Willibald (AWE), Ternberg (JG), Welscherheide, Zeissberg bei Freistadt (FSAG, JG). **Salzburg:** Koppl bei Aschach (JG), Salzburg (BMNH). **Steiermark:** Leutschach (JG), Sankt Ulrich (JG), Tragöss-Oberort (DBB), Weinburg (FSAG). **Tirol:** Huben in eastern Tirol (ZMB), Innsbruck (NHMV, ZMB), Iselsberg (DBB), Lienz (RMNH), Obladis, Hopfgarten, Salvenberg (CAS), Zirbelwald near Obergurgl, 1 km SW Zwiselstein in Ötztal. **Voralberg:** Ittensberg.

Belgium (95 ♀, 63 ♂, FSAG if not indicated otherwise): **Bra-**hant: Evere, Genval, Gistoux, Grez-Doiceau, Mont-Saint-Guibert, Nethen, Rhode-Sainte Agathe, Thoremmbais-Saint-Trond, Uccle, Waterloo. **Hainaut:** Aiseau, Athis, Barry, Binche, Bous-

Wanfercée. **Liège:** Acosse, Aubel, Barchon, Ben-Ahin, Beyne: ca 15 km SE Liège (BMNH), Beyne-Heusay, Cerexhe, Charneux, Chevron, Clermont-sur-Berwinne, Fléron, Forêt de Grunhault, Francorchamps, Henri-Chapelle, Hombourg, Jupille, La Calamine, La Reid, Lontzen, Montzen, Pepinster, Queue-du-Bois, Romsee, Spa, Xhendelesse, Welkenraedt. **Limburg:** Berg près de Tongres, Bocholt, Godsheide, Tongres. **Luxembourg:** Amonines, Hotton, Les Epioux, Lomprez, Ozo, Saint-Médard, Sampont, Smuid, Waharday, Wibrin. **Namur:** Aische, Alle (RMNH), Andenne, Baillonville, Belgrade, Bièvre, Branchon, Champion, Eghezée, Ernage, Feschaux, Gembloux, Gesves, Grand Leez, Ham-sur-Sambre, Loncée, Mount-Gauthier, Saint-Aubin, Saint-Gérard, Saint-Marc, Sorinnes, Sauvinière, Sombreffe, Winenne.

Bulgaria (1 ♂): Rila Mts. (DEI).



FIGURE 3. *Trypoxylon figulus*: geographic distribution in the Old World.



FIGURE 4. *Trypoxylon figulus*: geographic distribution in the New World.

Czechoslovakia (1 ♀, 3 ♂): **Jihomoravsky Kraj**: Vranov W Znojmo (as Frain, NHMV). **Vapadoslovensky Kraj**: Sturovo (SMT).

Denmark (41 ♀, 33 ♂, ZMK if not indicated otherwise): **Ålborg**: Vegger. **Bornholm**: Bastemose. **Frederiksborg**: Asserbo, Hillerød, Hundested, Jaegerspris Nordskov (tip of Hornsherred peninsula), Sorte Mose near Farum, Store Karlsminde near Lynæs, Tisvilde Hegn (FSAG, ZMK). **Holbæk**: Kongsore. **Maribo**: Maribo. **København**: Holte. **Odense**: Æbelø. **Randers**: Glatved Strand on Djursland Peninsula, Mols Bjerger. **Ringkøbing**: Gindeskov, Kjelstrup (E Skjern). **Sønderborg**: Sønderborg. **Sorø**: Agersø. **Svenborg**: Langeland Island: Hellenor. **Tønder**: Romo (VH), Stensbæk Plantage, Vejle: Klattrup.

Finland: (47 ♀, 48 ♂, HY unless indicated otherwise): Abo: Lohja, Perniö (AKM), Rymättylä (AKM), Turku (AKM). **Ålandia**: Eckerö (AKM, HY). Finström (AKM), Hammarland, Jomala (AKM), Saltvik (AKM). **Karelia Borealis**: Pyhäselkä (Hammassalahti). **Nylandia**: Helsinki (CU, HY), Parvoo = Borgå, Pernaja. **Ostrobothnia Australis**: Koivulahti. **Satakunta**: Loimaa (AKM), Yläne (AKM). **Tavastia Australis**: Hattula, Hämeenlinna, Janakkala, Nastola (AKM), Pälkäne (AKM, HY), Somero (AKM), Urjala, Vanaja, Ylöjärvi.

France (35 ♀, 16 ♂): **Alpes-Maritimes**: Guillaumes (FSAG). **Ariège**: Ax-les-Thermes (ZMB). **Basses-Alpes**: Allos (FSAG), Annot (FSAG), Fugeret (FSAG), Les Dourbes (KMG), Mon-

tagane de Lure (ZMK), Peyresq (FSAG), Saint-André-les-Alpes (FSAG). **Bouche-du-Rhône**: Marseille (FIS). **Calvados**: Lisieux (FSAG). **Corse**: Corte (KMG). **Côtes-du-Nord**: Saint-Rieul. **Haute-Savoie**: Dent d'Oche (MHNG), Mont Jorat (RMNH), Val de Charny (RMNH). **Haute-Vienne**: Rochecouart (FSAG). **Jura**: Arbois. **Loir-et-Cher**: Blois (FSAG). **Loire-Atlantique**: Forêt de la Roche Bernard (RMNH), Herbignac (RMNH). **Saône-et-Loire**: Uchizy (FSAG). **Seine-et-Oise**: Poissy (IEE). **Var**: Fréjus (KMG), Gonfaron (FSAG), Montouroux (RMNH). **Vaucluse**: Carpentras (RMNH). **Yonne**: Foissy-sur-Vanne (FSAG).

Germany, Democratic (81 ♀, 29 ♂, DEI if not indicated otherwise): **Berlin**: Berlin (DEI, HD, ZMB, ZSM). **Cottbus**: Alt Döbern (ZMB), Muskau, Neu Zauche (ZMB), Schlieben (ZMB). **Dresden**: Daubitz (SMT), Gersdorf near Kamenz (SMT). **Erfurt**: Erfurt (CU), Gotha (ZSM). **Frankfurt**: Biesental, Eberswalde area. **Gera**: Blankenburg (ZMB), Jena (NHMV, ZMB). **Halle**: Gernrode (ZMH), Halle (DEI, ZMB), Kyffhäuser, Seeburg, Naumburg (TMB). **Leipzig**: Winkelmühle. **Magdeburg**: Arendsee (SMT). **Neubrandenburg**: Faule Ort, Naturschutzgebiet Müritzhof. **Potsdam**: Fürstenberg (TMB), Zechlin (ZMB), Zootzen. **Rostock**: Prerow, Rostock, Stralsund (DEI, ZMB). **Rügen**: Hiddensee Island (DEI, SMT), Rügen Island: Mönchgut (SMT) and Umanz. **Schwerin**: Campow (ZMB), Schwerin (ZMB), Wendeltorf near Schwerin.

Germany, Federal (93 ♀, 51 ♂): **Baden-Württemberg**: Enzklösterle (KS), Heidelberg (ZSM), Hochwacht (HW), Isny (NHMB), Kaiserstuhl (ZMB), Karlsruhe (KS, ZMH), Küssaberg (KS), Radolfzell (ZMH), Schwarzwald (SMT), Tiengen in Wutach Valley (KS). **Bayern**: Abensberg (ZSM), Allach (ZSM), Aschaffenburg (FIS), Balderschwang (KS), Bamberg (ZSM), Ebenhausen (ZSM), Erdweg (ZSM), Hörgersthausen near Moosburg (ZSM), Ingolstadt (ZSM), Kahl (FIS), München (FSAG, ZSM), Nürnberg (ZSM), Rotwand area (ZSM), Schliersee (ZSM), Tegernsee (ZSM). **Hamburg** (ZMH): Ochsenwärder, Warwick. **Hessen**: Battenfeld near Biederkopf (ZMH), Gründau E Frankfurt (HW, HY), Marburg (HW, WJP). **Niedersachsen**: 2 km NW Dötlingen (VH), Dörpen: 14 km SW Papenburg (VH), Elbe Islands (VH), 5 km S Oldenburg (VH), Pevestorf: 72 km SE Lauenburg (VH), Wobek (ZMH). **Nordrhein-Westfalen**: Ahaus (ZSM), Neheim (FSAG), Leverkusen (ZMH), Plettenberg (HW), Siegen (VH). **Rheinland-Pfalz**: lower Ahr valley (FIS), Mainz (KS), Nattenheim (FSAG), Worms (FIS). **Schleswig-Holstein**: Amrum Island (VH), Eutin (KS), Ihlkate 2 km SE Kiel (VH), Lütjenburg (KS), Ratzeburg (ZMH), Schierensee SW Kiel (VH), Schleswig (VH).

Great Britain (92 ♀, 106 ♂; BMNH unless stated otherwise): **Berkshire**: Reading. **Buckingham**: Iver, Slough. **Devon**: Paignton. **Dorset**: Wareham. **Essex**: Brentwood, Colchester. **Fleet** Forest. **Gloucester**: Chalford. **Hampshire**: Brockenhurst, Fleet, New Forest, Wickham. **Isle of Wight**: Sandown, Shanklin. **Kent**: Cobham, Darent, Faversham (WJP), Goudhurst. **London**: Hampstead, Mill Hill, Mitcham Common, Norwood, Putney. **Northampton**: Ashton Wold (Oundle). **Oxford**: Goring, Oxford, Tubney near Oxford. **Somerset**: Dunstern. **Suffolk**: Arger Fen, Bury St. Edmunds, Dunwich. **Surrey**: Byfleet, Esher, Horsell, Weybridge. **Sussex**: Midhurst; Ambersham Common.

Greece (2 ♀, 4 ♂): **Peloponnesus** (de Beaumont, 1965): Mega Spilaion, Pirgos, and Taygetus. **Sterea Ellas**: Karpenission (KMG). **Thessalia**: Aspropotamos near Kalabaka (KMG).

Hungary (13 ♀, 3 ♂): **Bacs-Kiskun**: Kalocsa (TMB), Tabdi (TMB). **Győr-Sopron**: Neusiedlersee (NHMV). **Somogy**: Balatonzemes (TMB). **Szolnok**: Jászbéreny (TMB). **Tolna**: Simontornya (NHMV). **Veszprem**: Tihany Peninsula on Balaton Lake (HD, TMB, WJP).

Italy (19 ♀, 8 ♂): **Emilia-Romagna**: Cattolica (RMNH). **Lombardia**: Pavia: Cignolo Po (MSNM), Sondrio: Valtellina (KS). **Piemonte**: Alpinagno (GP). Colle di Sestriere in Alpi Cozie (GP), Murazzano (GP), San Benedetto Belbo 20 km S Alba (GP), Val d'Angroina in Alpi Cozie (WJP). **Valle d'Aosta**: Bresson near St. Vincent (GP). **Venezia Giulia**: Trieste (CU, NHMV). **Trentino-Alto Adige**: Bolzano (as Bozen, NHMV), Cavalese (BB), Collalbo (de Beaumont, 1959), Ortisei (NRS), Trafoi (NHMV).

Japan (Tsunek 1981): western Hokkaido (Esashi, Hakodate, Jozankei, Kamikawa) and central Hondo (Prefectures: Fukui, Ishikawa, Kyoto, Nagano, Niigata, Saitama, and Yamanashi). Specimens studied: 4 ♀, 4 ♂; KT, TN.

Morocco (1 ♀, 2 ♂): Asni, 1250 m alt. (paratype ♀ of *figulus barbarum*, RMNH). Fez (holotype of *feuzeti*, IEE), Marrakech (BMNH).

Netherlands (108 ♀, 73 ♂, RMNH if not indicated otherwise): **Drenthe**: Emmen, Erm, Havelte, Selligen, Wijster, Zuidlaren. **Gelderland**: Apeldoorn (FSAG), Barneveld, Hulshorst, Nijkerk, Putten, Renkum, Vierhouten, Wageningen (GVR, RMNH). **Groningen**: Onnen. **Limburg**: Epen (GVR), Haalen, Heerlen, Helden, Posterholt. **Noord Brabant**: Empel, Helenaveen, Neerijnen, Udenhout, Ulvenhout. **Noord Holland**: Aerdenhout, Hilversum, Laren. **Overijssel**: Heino, Zezepe. **Utrecht**:

Baarn, Bithoven, de Bilt, den Dolder. **Zuid Holland**: Delft (GVR), Hillegersberg, Leiden, Leiderdorp, Loosduinen, Oegsteeg, Rijnsburg, Rotterdam, 's Gravenhage, Warmond.

Norway (1 ♀, 1 ♂): **Buskerud**: Ål (as Aal, DEI). **Oppland**: Lom (RMNH).

Poland (35 ♀, 24 ♂): **Białystok**: Białowieża (as Bialowies, FIS, ZMB), Leńkowo near Grajewo (ZMB). **Bydgoszcz**: Bydgoszcz (as Bromberg, SMT). **Kielce**: Góry Pieprzowe near Sandomierz (CAS), Kielce (TMB), Sandomierz (CAS). **Lublin**: Kazimierz on Wisła River (WJP). **Warszawa**: Podkowa Leśna (CAS). **Wrocław**: Muszkowice near Henryków (WJP), Osola: 25 km NW Wrocław (WJP), Wrocław (CAS, WJP). **Szczecin**: Bielinek (as Belinchen, ZMB), Międzyzdroje (as Misdroy, ZMB). **Zielona Góra**: Kostrzyn (as Cüstrin, ZMB).

Portugal (2 ♀, 2 ♂): **Douro**: Resende (RMNH). **Estramadura**: Lisboa (RMNH).

Romania (8 ♀, 9 ♂, MGA if not indicated otherwise): **Bacău**: Lacul Bicăz 20 km W Piatra Neamț (HD). **Brasov**: Sighisoara, Turnisor near Sibiu. **București**: Branești (WJP), Budești. **Constanța**: Crișan, Hagieni. **Crișana**: Ineu (as Borosjenő, TMB). **Orasul București**: Mogosoaia, Pantelimon. **Timișoara**: Eșelnița, Jupălnic near Mehedinți, Mehădia (NHMV), Orsova (RMNH).

Spain (53 ♀, 51 ♂): **Alicante**: Alicante (KMG), Orihuela (IEE). **Avila** (SFG): Becedas, Gilbuena, Puerto Castilla, Solana de Béjar, Tremedal. **Barcelona**: Canet de Mar (FSAG). **Caceres** (SFG): Baños de Montemayor, Cabezuella del Valle, Gargantilla, La Garganta. **Cadiz**: Algeciras (NHMV). **Ciudad Real**: Ruidera (FJS). **Granada**: Salobreña (VH). **Huesca**: Arguis (RMNH), Torla (FSAG), Valle de Ordesa. **Lerida**: Bohí, Lago di San Maurício (FSAG). **Logroño**: San Roman de Cameros (IEE). **Madrid**: El Escorial (IEE), Sierra de Guadarrama (IEE). **Salamanca** (SFG): Béjar, Cantagallo, Colmenar de Montemayor, El Cerro, La Cabeza de Béjar, Lagunilla, Montemayor del Rio, Navacarros, Palomares de Béjar, Peñacaballera, Puebla de San Medel, San Medel, Sorihuela, Valdehijaderos, Vallejera de Rio Frio. **Teruel**: Albarracín (KMG, ZSM), Libros (FSAG). **Toledo**: Toledo (RMNH, WJP). **Valencia**: La Eliana (FSAG). **Valladolid**: Olmedo (FJS, WJP). **Simancas** (RMNH, WJP), Valladolid (FJS, WJP), Villa Banez (FJS), Villalba de los Alcores (FJS). **Zamora**: Montamarta (FSAG).

Sweden (43 ♀, 40 ♂, NRS if not indicated otherwise): **Dalarna**: Täktbo. **Öland**: Arontorp, Glömminge, Högsrum, Halltorps hage, Mörbylånga, Repplinge, Vickelby. **Östergötland**: St. Anna Korsnäs, Simonstorp. **Skåne**: Åhus, Hålsingborg, Häväng, Höör distr. (BMNH), Torekov (ZMK), Trolleholm, Vitemölla. **Småland**: Hagby, Jönköping, Kalmår, Kalmår Sund (Blå Jungfrun), Söderåkra. **Södermanland**: Hägenäs, Målarhöjden, Mörtö, Tullgarn, Tyresö, Tyresö - Brevik. **Upland**: Björkö, Häbo - Tibble, Österåker, Rådmansö, Svartsjö, Värmdö, Vassunda.

Switzerland (78 ♀, 41 ♂, NHMB if not indicated otherwise): **Bern**: Adelboden, Bantiger (7 km NE Bern), Bätterkinden, Bern, Büschwald forest (5 km SSW Bern), Gadmien, Mürren, Signau, Spiez, Wacheldornmoos bog (27 km SE Bern), Zweisimmen, Zwischenflüh (16 km SSW Thun). **Genève**: Genève (MHNG, NHMV), Genthof (NHMV), Peney (MHNG, NHMV). **Graubünden**: Chur (ZSM), Parc National Suisse (MHNG), Somvix, Versam. **Luzern**: Entlebuch Graben (CAS). **Sankt Gallen**: Vättis. **Valais**: Ausserberg (11 km W Brig), Ayel - Zinal (RMNH), Berisal (BMNH, NHMB, NHMV), Châlet à Gobet (BMNH), Champéry, Eugene (as Usegne), Evolène, Haudères, Inden, Lötschental, Martigny, Riederalp (8 km NNE Brig), Saas, Sankt Niklaus, Sierr (NHMV), Simplon (BMNH), Stalden, Verbier (BMNH), Vissoye, Zermatt. **Vaud**: Nyon (MHNG).

Turkey (6 ♀, 3 ♂): **Afyon:** Çay (FSAG). **Ankara:** Ankara (as Angora, TMB). **Karagöl** (BMNH). **Denizli:** Sarayköy (as Seraj-Köy, TMB). **Istanbul:** Sile area (BMNH). **Konya:** Konya (JG). **Kütahya:** Karat Dagı (BMNH). **Samsun:** Köprübaşı (de Beaumont, 1967). **Tokat:** Arguslu above Niksar (BMNH). **Trabzon:** Zigana Dagı (de Beaumont, 1967).

USSR: **Armenian SSR:** Yerevan area (8 ♂, ZMMU). **Azerbaijdzhan SSR** (1 ♀): Khanlar (as Helenendorf, NHMV). **Kazakh SSR:** Vostochnokazakhstanskaya obl.: foothills of Azutau Khrebet 18 km N Alekseyevka (1 ♂, VLK); Kalbinskiy Khrebet, 20 km SE Leninka (1 ♀, VLK); 15 km NW Ust'-Kamenogorsk (1 ♂, VLK). **Latvian SSR** (2 ♀, 8 ♂): Wezukkul, 20 km S Jaunjelgava (ZMB). **Lithuanian SSR** (1 ♀, 2 ♂): Ignalina (DEI). **Russian SSR:** Belgorodskaya oblast: Valuyki (2 ♀, NHMV). Chelabinskaya oblast: Ilmenskiy Zapovednik (1 ♀, ZMMU). Gorno-Altayskaya Avtonomnaya oblast: Uymen River (2 ♂, ZMMU). Ivanovskaya oblast: Kineshma (1 ♀, ZMMU). Karelian ASSR (2 ♀, 1 ♂, HY): Salmi, Sortavala. Kuybyshevskaya oblast: Mirnyi (2 ♀, VLK). Leningradskaya oblast: Solnechnoye (as Ollila, 1 ♂, HY), Streltsovo (as Muola, 1 ♀, HY), Suursari Island (as Hogland, 1 ♂, HY). Karachayevo-Cherkesskaya oblast: Teberda-Dzhagatag (2 ♀, HD). Moskovskaya oblast: Krylatskoe near Moskva (4 ♀, 1 ♂, ZMMU). Moskva (1 ♀, ZMMU), Mytishchi (1 ♂, ZMMU), Zavety Il'icha (1 ♂, ZMMU). Orenburgskaya oblast: Kargala near Orenburg (1 ♀, ZMB). **Ukrainian SSR:** Otuz Valley in Crimea (2 ♀, 2 ♂, ZMMU). Podgortse E Lvov (as Podhorce, 1 ♀, NHMV). Sebastopol area (1 ♂, ZMMU).

Yugoslavia (11 ♀, 6 ♂): **Croatia:** Plitvice (RMNH), Senj (VH). **Kosovo:** Peč (TMB). **Macedonia:** Mavrovska Valley (RMNH), Ohrid - Resen (RMNH). **Slovenia:** Begunje near Postojna (KS), Kranjska Gora (as Weissenfels, NHMV), Portorož (FIS), Radenci in Mura Valley (near Austrian border, as Radein, NHMV), Vipava (as Wippach, NHMV).

RECORDS (New World) (Krombein 1951:955, 1979:1643; Finnamore 1982:115).—**Quebec:** Duchesnay (1 ♀, USNM), Ile Perrot (2 ♀, LEM), Lakeside (1 ♀, LEM), Levis (3 ♀, LEM), Montreal (1 ♀, CU; 2 ♂, LEM), Ste. Anne de Bellevue (3 ♀, 6 ♂, LEM), Ste. Annes (1 ♀, 3 ♂, LEM), St. Hilaire (5 ♀, LEM), St. John's Co. (1 ♀, LEM).

Ontario: Ottawa (2 ♀, 2 ♂, CNC), St. Anne's (4 ♀, CNC).

Maine: Bangor (1 ♀, MCZ).

New Hampshire: Glen House (1 ♂, USNM).

Massachusetts: Cambridge (1 ♀, USNM), Dorchester (1 ♀, MCZ), Fall River (1 ♀, USNM), no specific locality (1 ♀, WSU).

Trypoxylon minus de Beaumont

Trypoxylon figulus var. *minus* de Beaumont, 1945:478, ♀, ♂ (as *minor*, incorrect original spelling). Holotype: ♀, Switzerland: Cologny near Geneva (Mus. Zool. Lausanne). — BLÜTHGEN, 1951:234 (var. *minor*); de Beaumont, 1958:206 (forma *minor*), 1959:30 (same); Wolf, 1959:15, 16 (*figulus minus*); VALKEILA, 1961:144 (var. *minor*); de Beaumont, 1964a:290, 1964b:84 (forma *minor*), 1965:56 (same), 1967:338 (same); BOHART and MENKE, 1976:346 (ssp. *minor*); RICHARDS, 1980:45 (var. *minor*).

Trypoxylon figulus koma TSUNEKI, 1956:28, ♀, ♂. Holotype: ♀, Korea: Mt. Kodai (K. Tsuneki collection, Mishima). New synonym. — BOHART and MENKE, 1976:346; TSUNEKI, 1981:20.

Trypoxylon figulus medium: WOLF, 1959:fig. b.

DIAGNOSIS.—Most *minus* can be recognized by the presence of a flat, median process emerg-

ing from the anteroventral mesothoracic carina (Fig. 5B, C). However, the process is absent in a female and two males from Linz, Austria, and also one of the females from Gonfarsons, France, which otherwise do not differ from the remaining *minus* examined. Unlike most *figulus*, the mesopleural setae around scrobe are shorter than the midocellar diameter. In the female, the median clypeal projection is shorter than in *medium*; unlike *figulus* and *medium*, the clypeal free margin is scarcely sinuate or evenly arcuate between the orbit and the projection (Fig. 5A). The female hindcoaxal pit is circular or nearly so (Fig. 5D-F), unlike most *figulus*. The maximum length of male flagellomere X is 0.5–0.7 times its width; flagellomere XI is longer than in most *medium*; its maximum length equals 2.2–3.1 times its basal diameter. Body length 6–9 mm in female, 5–7.5 mm in male.

VARIATION.—In most females, the free margin of the clypeal projection is emarginate, but it is entire in a female from Finland, one from France and one from Sweden.

In most males, the maximum length of flagellomere X is 0.6–0.7 times its width, and the maximum length of flagellomere XI is 2.2–2.4 times the basal diameter. These ratios are 0.8 and 2.6, respectively, in some males from Belgium, 0.6 and 2.6 in the single male examined from Sardinia, 0.8 and 3.0 in the single male from Corsica, and 0.5 and 3.1 in the single male from Gerona, Spain.

LIFE HISTORY.—A female from Elender Wald, Austria (NHMV), was reared from a gall of *Andricus kollari* (Hartig). I was unable to find this locality.

GEOGRAPHIC DISTRIBUTION (Fig. 5).—Palearctic Region between western Europe and Korea, north to about 64°N in Norway and Sweden and about 67°N in Finland, south to northern Mediterranean countries including Sardinia and Sicily, northern Turkey and southern Kazakh SSR. Unknown from Great Britain and North Africa. The absence of this species in Great Britain suggests that it reached northwestern Europe only recently, after separation of the British Isles from the continent.

RECORDS.—Austria (41 ♀, 52 ♂, NHMV if not indicated otherwise): **Burgenland:** Breitenbrunn (JG), Donnerskirchen on Neusiedlersee (KS), Mögersdorf (JG), Möbisch: 5 km S Rust (RMNH). **Kärnten:** Bleiberg (RMNH), Mallnitz (ZMB), Waidisch bei Ferlach (FSAG). **Niederösterreich:** Annigern, Bisamberg near Vienna, Brühl, Dornbach, Hainbach, Hainburg

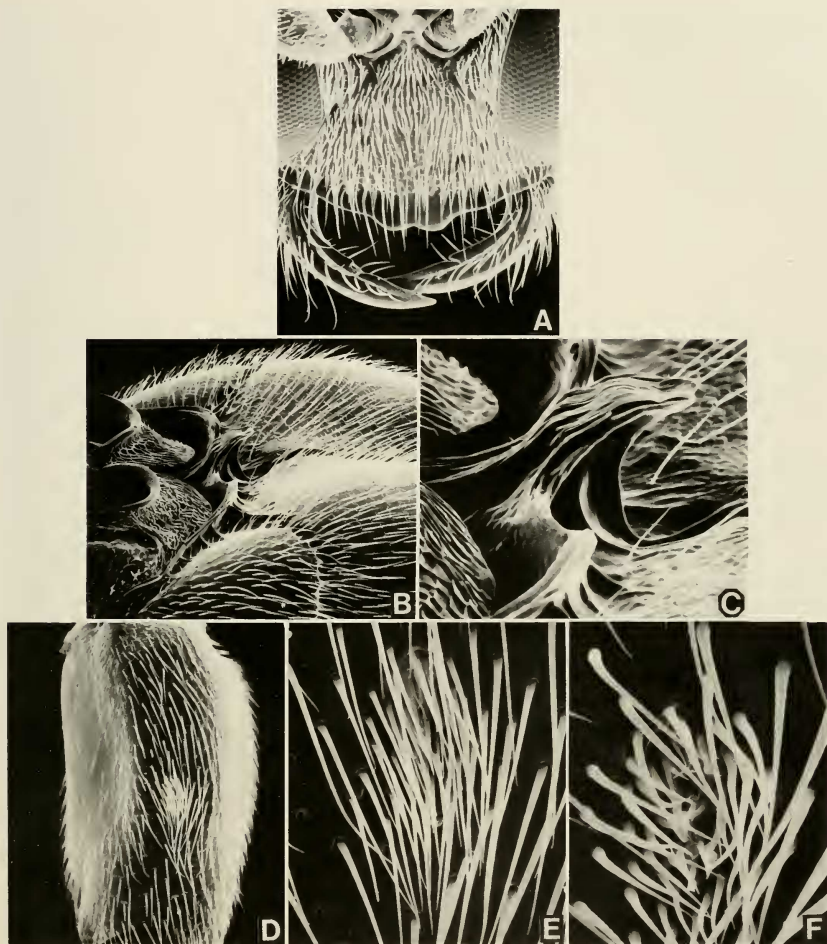


FIGURE 5. *Trypoxon minus*: A—female clypeus, B—mesothoracic venter, C—anteroventral mesothoracic process, D—female hindcoxa ventrally, E—female hindcoxal pit, vertical view, F—same, oblique view.

(ZMB), Kahlenberg near Vienna, Neunkirchen (FSAG, JG), Piesting, Purgstall (JG), Schneeberg, Traismauer, Wien (Prater). **Oberösterreich:** Almsee (NHMV), Gutau (JG), Innerbreitenau (JG), Kremsmünster (FSAG), Linz (HY, JG, NHMV), Rutzing bei Hörsching (JG), Sarleinsbach, Zeissberg bei Freistadt (FSAG, JG), Zellhof bei Bad Zell (JG). **Salzburg:** Salzburg (BMNH, FSAG). **Steiermark:** Admont (FSAG), Gleichenberg (JG), Riegersburg (JG), Tragöss-Oberort (DBB), Weinburg (JG). **Tirol:** Huben (ZMB), Innsbruck, Kals (RMNH), Stubai (WJP), Wens (BMNH), Zwieselstein in Ötztal.

Belgium (348 ♀, 379 ♂, FSAG if not indicated otherwise): **Brabant:** Berchem-Sainte-Agathe, Groenendaal, Monstreux, Rhode-Saint-Genèse, Rixensart, Tilly, 't Roth (RMNH), Woluwe-Saint-Pierre. **Hainaut:** Gilly, Gosselies, Lobbes-Calvaire, Quaregnon. **Liège:** Bleyberg, Chaudfontaine, Clermont-sur-Berwinne, Dalhem, Embourg, Esneux, Forêt de Grunhault, Fouron-Saint-Pierre, Hergenrath, Herstal, Jupille, Liège, Queue-du-Bois, Remersdael, Spa, Xhendelesse, Wandre. **Limburg:** Bassenge, Eben, Kanne, Sint Pietersberg (RMNH), Tongres, Wonck. **Luxembourg:** Bodange, Chatillon, Les Epieux. **Namur:**



FIGURE 6. *Trypoxylon minus*: geographic distribution.

Beauraing, Couvin, Felenne, Gemboux, Gesves, Jambes, La Plante, Malonne, Mont-Gauthier, Namur, Saint Marc, Willez, Yvoir. **West-Vlaanderen:** Sint Pieter.

Bulgaria (1 ♂): Chepalare Pass in Rhodope Mts. (ZMT).

Czechoslovakia (4 ♀, 4 ♂): **Jihomoravský Kraj:** Vranov W Znojmo (as Frain, NHMV). **Vapadoslovenský Kraj:** Stúrovo (HD, SMT).

Denmark (2 ♀, ZMK): **Maribo:** Lolland Island: Roden Skov. **Vejle:** Klattrup.

Finland (105 ♀, 124 ♂, HY if not indicated otherwise): **Abo:** Perniö (AKM), Rymättylä (AKM), Särkisalo (AKM), Turku (AKM). **Ålandia:** Eckerö (AKM, HY, ZMK), Finström (AKM), Geta (ZMK), Hammarland, Lemland. **Karelia Australis:** Virolahti. **Karelia Borealis:** Herajoki on Pielinen Lake (ZMK), Kesälahti, Kitee (AKM, HY), Polvijärvi (AKM), Tohmajärvi. **Karelia Ladogensis:** Parikkala, Simpele. **Kuusamo:** Perä Posio. **Lapponia Kemensis:** Sodankylä. **Nylandia:** Helsinki, Pernaja (as Pärnä). **Ostrobothnia Australis:** Koivulahti. **Ostrobothnia Borealis:** Räväsjärvi, Rovaniemi. **Ostrobothnia Media:** Siikajoki. **Satakunta:** Loimaa (AKM), Suoniemi. **Savonia Australis:** Lappeenranta, Rautjärvi. **Tavastia Australis:** Aitolahhti, Hämeenlinna, Hattula, Janakkala, Kalvola, Kangasala, Lahti (AKM), Lammi, Luopioinen (AKM), Pälkäne, Pirkkala (as Birkkala), Somero (AKM), Tyrväntö, Vanaja, Ylöjärvi.

France (24 ♀, 17 ♂): **Basses-Alpes:** Allos (FSAG), Annot (FSAG), Colmars (FSAG), La Javie (FSAG), Peyresq (FSAG). **Saint-André-les-Alpes (FSAG):** Corse: Bonifacio (KMG), Col de Sorba (KMG). **Drome:** Dieulefit (RMNH). **Haute Savoie:** Chamonix (RMNH). **Haut-Rhin:** Rouffach (FSAG). **Loiret:** Lorris (RMNH). **Lozère:** Sainte Enimie (BMNH). **Nièvre:** Nevers (RMNH). **Puy-de-Dôme:** Beaune (FSAG, ZMK), Besse (BMNH). **Pyrenées-Orientales:** Vinça (VH). **Var:** Gonfaron (FSAG).

Germany, Democratic (33 ♀, 20 ♂, DEI if not indicated otherwise): **Berlin:** Berlin-Borgsdorf (HD). **Dresden:** Freital (SMT). **Gersdorf** near Kamenz (SMT). **Moritzburg (SMT).** **Erfurt:** Nordhausen area (HD). **Frankfurt:** Eberswalde area (DEI, HD), 20 km NW Eisenhüttenstadt (HD), Schönwalde near Berlin (HD). **Gera:** Beutnitz bei Jena. **Halle:** Halle (DEI, ZMB). **Kyffhäuser (DEI, ZMB).** **Karl-Marx-Stadt:** Freiberg. **Leipzig:** Dornreichenbach near Wurzen, Leipzig, Reglitz bei Schkeuditz. **Magdeburg:** Haldensleben, Stapeburg (ZMH). **Neubrandenburg:** Serrahn near Neustrelitz (HD). **Teterower See (HD).** **Rostock:** Rostocker Heide. **Schwerin:** Perleberg. **Schwann** near Güstrow.

Germany, Federal (59 ♀, 42 ♂): **Baden-Württemberg:** Enzklosterle (KS), Grötzingen (KS), Heidelberg (BMNH), Kaiserberg (ZMH), Kaiserstuhl (ZMB), Karlsruhe (KS, ZMH), Küssaberg (KS), Tübingen (KS), Windenreute near Emmendingen (ZMB). **Bayern:** Aschaffenburg (VH), Balderschwang (KS), Karlstadt am Main (KS), Lohr am Main (KS), Mainfranken (FIS), Miltenberg (FIS), München (ZSM), Oberau in foothill of Ammer Mts. (KMG), 32 km S Würzburg (RMNH). **Hessen:** Dillenburg (HW, WJP), Fulda (VH), Marburg (HW, WJP), Taunus (KS). **Rheinland-Pfalz:** Bad Münster am Stein (KS), Burgen an der Mosel (TMB), Donnersberg, Mainz (KS). **Niedersachsen:** Sage: 25 km S Oldenburg (VH). **Schleswig Holstein:** Lütjenburg (KS), Russee near Kiel (VH). **Schierensee SW Kiel (VH).** **Westfalen:** Plettenberg (HW), Siegen (HW).

Greece (2 ♀, 2 ♂): **Ionian Islands:** Isle de Levkas (as Lefkas, BMNH). **Stereia Ellas:** Timfristos (KMG).

Hungary (1 ♀, 1 ♂): Balaton (HD).

Italy (23 ♀, 14 ♂): **Abruzzi:** Scanno (KMG). **Emilia-Romagna:** Bologna, Pracchia (RMNH), Ronzano (NHMV); Modena:

Zocca: Montetortore (NHMV). **Friuli-Venezia Giulia:** Gemona (JG), Prosecco (NHMV), Tarvisio (NHMV). **Lombardia:** Varese: Mercallo (MSNM). **Piemonte:** Borgomale (GP), Castellnuovo in Asti (GP), Chianale (GP), Condove (GP), San Benedetto Belbo ca 20 km S Alba (GP), Val d'Angrogna in Alpi Cozie (1 ♀, det. J. de Beaumont, WJP), Vinovo 10 km S Torino (GP). **Sardegna:** Arizo (BMNH), Desulo (BMNH). **Sicilia:** Piano Battaglia (KMG). **Trentino-Alto Adige:** Colle Isarco (MSNM), Merano (as Meran, FSAG). **Valle d'Aosta:** Buthier (ZMK). **Veneto:** Padova (de Beaumont, 1959). **Venezia Giulia:** Trieste (NHMV).

Korea: **North Korea:** Mt. Kodai near 38th parallel (Tsuneki, 1956, 1981), Mt. Sombo near 38th parallel (1 ♀, 1 ♂). **South Korea:** Seoul (Tsuneki, 1956, 1981).

Netherlands (5 ♀, 9 ♂, RMNH unless indicated otherwise): **Limburg:** Elkenrade, Epen, Maastricht, Slenaken, Vijlener Bosch (GVR). **Noord Brabant:** Empel. **Zuid Holland:** Leiden.

Norway (11 ♀, 19 ♂): **Akerhus:** Oslo (as Kristiania, ZMUB). **Hordaland:** Granvin (ZMUB). **Nord Trøndelag:** Rora (FSAG). **Oppland:** Lom (RMNH). **Sogn og Fjordane:** Balestrand (ZMUB). **Vestagder:** Kristiansand (ZMUB). **Vestfold:** Herstad (ZMUB).

Poland (7 ♀, 13 ♂): **Białystok:** Białowieża (as Bialowiez, ZMB). **Kraków:** Ojców (SMT), Pieniny Mts. (WJP). **Wrocław:** Karłonosze Mts. (as Riesengebirge, ZMB), Osola: 25 km NW Wrocław (WJP), Rościszewice (WJP), Sobótka: 35 km S Wrocław (WJP), Wrocław (CAS), 10 km NE Wrocław (WJP). **Rzeszów:** Jarosław (CAS).

Portugal (1 ♀): **Douro:** Resende (RMNH).

Romania (6 ♀, 3 ♂, MGA if not indicated otherwise): **Bucuresti:** Ciolpani, Periș, Videle (WJP). **Constanta:** Babadag. **Ploesti:** Valea Longă-Gorgota. **Timisoara:** Eșelnița, Ogradina, Rzesova.

Spain (2 ♀, 4 ♂): **Gerona:** Gerona (BMNH). **Huesca:** Sierra de Oroel (FSAG), Valle de Ordesa (FIS). **Salamanca:** Horcajo de Montemayor (SFG), Valdehijaderos (SFG).

Sweden (34 ♀, 44 ♂, NRS if not indicated otherwise): **Bohuslän:** Ljung. **Dalarna:** Ludvika, Näs, Stora Kopparberg. **Täktbo. Gästrikland:** Sandviken. **Gotland:** Fardume Träsk E Lärbo (ZMK), Visby, St. Karlsö. **Jämtland:** Undersåker. **Närke:** Örebro. **Öland:** Halltorps hage, Hörsrum, Råplinge. **Skåne:** Höör distr. (BMNH), Skärådal, northern Skåne (BMNH). **Östergötland:** Kvarsebo, Norrköping, Simonstorp. **Småland:** Barkeryd, Höreda. **Järsnäs.** **Ljunganum.** **Södermanland:** Flisby, Runmarö, Tullgar, Tyresö - Svartöcken. **Uppland:** Harparbol, Rådmansö, Stockholm, Uppsala (HY), Vassunda, Vira bruk. **Västertotten:** Händene. **Västmanland:** Sala.

Switzerland (21 ♀, 26 ♂, NHMB if not indicated otherwise): **Bern:** Bätterkinden, Bern, Burgdorf, Grauholz forest (up to 9 km NNE Bern), Wachseldormmoos bog (27 km SE Bern). **Engadin:** Zuoz (AWE). **Genève:** Genève Cologny (BMNH), Genthod (NHMV), Peney (MHNG). **Graubünden:** Parc National Suisse (de Beaumont, 1958), Somvix. **Tessin:** Lugano (FSAG). **Valais:** Binntal (15 km NE Brig), Grimentz (FSAG, RMNH), St. Luc (RMNH), Simplon (BMNH), Zermatt (RMNH). **Vaud:** Nyon (MHNG). **Zürich:** Wädenswil.

Turkey (1 ♀, 2 ♂): **Artvin:** Artvin, Berta (BMNH). **Istanbul:** Belgrat Orman (de Beaumont, 1967). **Samsun:** İbra (BMNH).

USSR: **Georgian SSR:** Bakuriani (1 ♀, ZMMU). **Kazakh SSR:** Chimkent, 2000 m (1 ♂, WJP); Razdolnyy area, 50°43' N, 81°06' E (1 ♂, VLK). **Zapovednik Aksu-Dzhabagly** (1 ♀, ZMMU). **Kirghiz SSR:** Arkhit in Chatkalskiy Khrebet (1 ♂, ZMMU). **Russian SSR:** Karlaian ASSR: ozero Tumas (as Kolatskaya, 1 ♀, HY). **Kemerovskaya oblast:** 60 km SE Novokuznetsk (1 ♂, VLK).

Leningradskaya oblast: Kondratyev V Vyborg (as Säkijärvi, 1 ♀, HY). Moskovskaya oblast: Mytishchi (1 ♂, ZMMU). Perm'skaya oblast: Nizhnyaya Kurya, 15 km W Perm (3 ♀, 2 ♂, WJP). **Ukrainian SSR:** Crimea: Krymskiy Zapovednik (1 ♂, ZMMU). Yugoslavia (4 ♀, 3 ♂). **Croatia:** Plitvice (RMNH), Skrad (GP). **Slovenia:** Bled (RMNH), Cerknica (KS), Logatec (as Loitsch, ZMH), Opčina Mtn. on Italian border E Triest (NHMV). **Serbia:** Draževac (FSAG).

Trypoxylon medium de Beaumont

Trypoxylon figulus var. *medium* DE BEAUMONT, 1945:477, ♀, ♂ (as *media*, incorrect original spelling). Holotype: ♀, Switzerland: Martigny (Mus. Zool. Lausanne). — BLÜTHGEN, 1951: 234 (var. *media*); DE BEAUMONT, 1958:206 (forma *media*), 1959:30 (same); WOLF, 1959:15, 16 (*figulus medium*); VALKEILA, 1961:144 (var. *media*); DE BEAUMONT, 1964a:290, 1964b:84 (forma *media*), 1965:56 (same), 1967:338 (same); BOHART AND MENKE, 1976:346 (ssp. *medium*); LOMHOLDT, 1976:267 (*figulus media*); RICHARDS, 1980:45 (var. *media*); TSUNEKI, 1981:19 (*medium*).

Trypoxylon figulus minus var. *rubi* WOLF, 1959:15, ♂. ! Lectotype, ♂, Federal Germany: Plettenberg (coll. H. Wolf, Plettenberg). **present designation.** Synonymized by DE BEAUMONT, 1964:291.

Trypoxylon figulus minus: WOLF, 1959:fig. c.

DIAGNOSIS.—There is no single character by which *medium* can be distinguished from both *figulus* and *minus*. The anteroventral mesothoracic carina is either straight or sinuate and curved posterad mesally, but unlike that of most *minus* it is not expanded into a process. Unlike those of most *figulus*, the mesopleural setae around the scrobe are shorter than the midocellar diameter. In the female, the clypeal free margin is evenly concave between the orbit and median projection (Fig. 7A), unlike that of *minus* and most *figulus*, and the setae of the hindcoxal pit form a curious channel-like structure visible only under high magnifications (Fig. 7C, D) and which has not been found in the other two species. The hindcoxal pit is circular (Fig. 7B) instead of oblong (as it is in most *figulus*). The maximum length of male flagellomere X equals 0.75–0.9 of its basal diameter (the highest ratios are observed in specimens in which the flagellomere XI is the longest); the maximum length of flagellomere XI is usually 2.0–2.2 times its basal diameter (2.2–3.6 in *figulus* and *minus*). However, the flagellomere XI length is 2.4 times its basal diameter in some specimens, e.g., in a male from Horsell, England (KMG), or a male from Uilac, Romania; such specimens differ externally from *figulus* in having a shorter mesopleural vestiture and a longer flagellomere X. Gonoforceps with ventroexternal expansion at about midlength (Fig. 7E, F); expansion absent in *figulus* and *minus*.

Body length 6.5–12 mm in female, 6.0–8.5 mm in male.

LIFE HISTORY.—Several specimens of *medium* (seen by me) were reared from *Rubus* twigs (Wolf, 1959). A male was reared from an old gall of the chloropid fly *Lipara lucens* Meigen containing a vacated nest of the bee *Hylaeus pectoralis* Förster (England, Hampshire, Brown-down, G. R. Else collector, BMNH).

GEOGRAPHIC DISTRIBUTION (Fig. 8).—Western and central Palearctic Region between Great Britain and eastern Kazakh SSR, north to southern England and beyond the Arctic Circle in Finland, south to northern Mediterranean countries including Mallorca, Crete, and Cyprus, as well as Turkey, Syria, Israel, and northern Iran. Unknown from Iberian Peninsula and North Africa.

RECORDS.—Austria (30 ♀, 20 ♂, NHMV if not indicated otherwise): **Burgenland:** Andau (RMNH), Jois (JG), Donnerskirchen an Neusiedlersee (KS), Neusiedl (KS, NHMV, ZMB), Panzergraben an Neusiedlersee (JG), Winden (JG), Zurndorf (AWE, RMNH). **Niederösterreich:** Bisamberg near Vienna, Deutsch Altenburg (ZMB), Donauauen near Vienna (ZMH), Hainburg (ZMB), Herzogsdorf (JG), Marchfeld (JG), Oberweiden (DBB), Piesting, Schneeberg, Stammersdorf (DBB), Wientürkenschanze. **Oberösterreich:** Gutau (JG). **Salzburg:** Katzenberghöhe (VH), Salzburg (BMNH). **Tirol:** Galtür (BMNH), Huben (ZMB), Innsbruck, Kraspe (DEI), 1 km SW Zwißelstein. **Vorarlberg:** Bielerhöhe.

Belgium (11 ♀, 17 ♂, FSAG). **Antwerpen:** Geel. Liège: Liège, Montzen, Spa, Wandre. **Liège:** Bree, Eben, Lummen. **Luxembourg:** Chatillon, Les Epieux, Torgny. **Namur:** Eprave, Ferage, Mont-Gauthier.

Bulgaria (1 ♀): Ruse (SMT).

Cyprus (3 ♀, 6 ♂): Amathus (FSAG, RMNH), Paphos (KMG). Czechoslovakia (1 ♀, 2 ♂): Jihočeský Kraj: Prachatic (as Prachaticz, NHMV). **Vapadoslovenský Kraj:** Štúrovo (SMT).

Denmark (11 ♀, 8 ♂, ZMK, if not indicated otherwise): **Bornholm:** Arner. **Frederiksborg:** Hulerød, Humlebak (S Helsingør). Tisvilde Hegn. **Hjørring:** Fauerholt Hede (ca 10 km W Frederikshavn), Skoven on Læse Island. **Maribo:** Kristianssæde Skov on Lolland Island. **Randers:** Glatved Strand and Kalo on Djursland Peninsula. Mols Bjerge. **Ribe:** Borsmose, Ho Plantage. **Svendborg:** Keldsnor on Langeland Island. **Thisted:** Bagso at Nors (ca 7 km NW Thisted). **Tønder:** Romo Island (RMNH), Stensbæck Plantage.

Finland (18 ♀, 15 ♂, HY if not indicated otherwise): Åbo: Perniö (AKM), Rymättylä (AKM). **Ålandia:** Finström (AKM), Hammarland. **Karelia Australis:** Virolahti. **Karelia Borealis:** Nurmee. **Kuusamo:** Kuusamo (ZMK). **Lapponia Inarenensis:** Ivalo. **Nylandia:** Hyvinkää. **Ostrobothnia Media:** Paavola. **Tavastia Australis:** Hämeenlinna, Hattula, Janakkala, Pälkäne, Somero (AKM), Vanaja.

France (24 ♀, 8 ♂, FSAG if not indicated otherwise): **Aisne:** Liesse. **Alpes Maritimes:** Aurons (AWE). **Aube:** bois de Lignéres. **Aveyron:** Creissels. **Basses-Alpes:** Annot, Montagne de Lure (ZMK). **Pyrénées:** Dordogne: Pauant. **Drôme:** Dieulefit (RMNH). **Haute-Loire:** Pont de Sumène. **Haut-Rhin:** Rouffach. **Hautes-Alpes:** Saint-Véran. **Hérault:** Canet (BMNH).

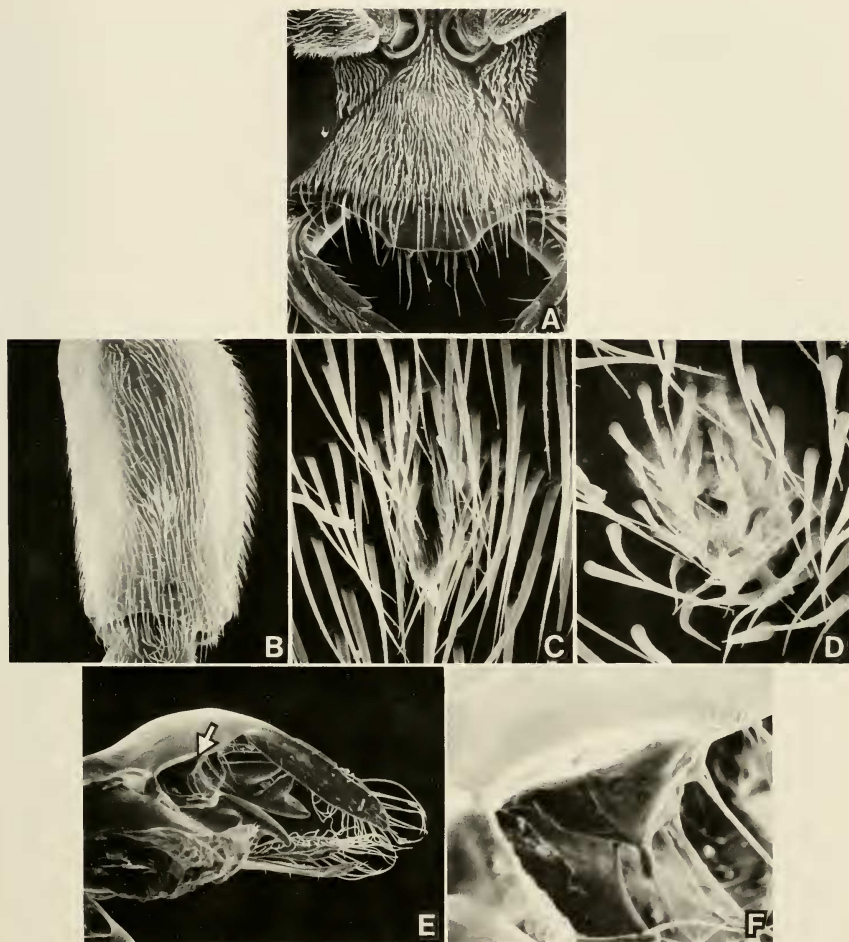


FIGURE 7. *Trypoxylon medium*: A—female clypeus, B—female hindcoxa ventrally, C—female hindcoxal pit, vertical view, D—same, oblique view, E—male genitalia (arrow: area shown in F), F—same, process of gonoforceps.

Landes: Mont-de-Marsan (MHNG), Parentis (KMG), St. Girons - Plage (RMNH). **Moselle:** Orny, Sierck. **Pyrenées-Orientales:** La Llagonne - Mont Louis (VH). **Var:** Saint-Tropez, Valescure (KMG). **Vaucluse:** Carpentras (RMNH).

Germany, Democratic (15 ♀, 6 ♂): **Berlin:** Berlin (BMNH, DEI, ZMB), Spandau (ZMB). **Cottbus:** Luckau (DEI). **Dresden:** Gersdorf near Kamenz (SMT). **Frankfurt:** Buckow (ZMB). **Eberswalde area** (DEI), Störitzsee near Berlin (DEI). **Halle:** Bad Frankenhausen near Kyffhäuser (HD), Halle (DEI), Kat-

tenburg near Kyffhäuser (HD), Kyffhäuser (DEI). **Potsdam:** Gross Machnow (ZMB).

Germany, Federal (25 ♀, 34 ♂): **Baden-Württemberg:** Fed-erseersee (KS), Kaiserberg (ZMH), Kaiserstuhl (VH, ZMB), Karlsruhe (ZMH), Radolfzell (ZMH). **Bayern:** Balderschwang (KS), Kreuth in Oberbayern (ZMB), Mainfranken (FIS), Miltenberg (FIS), Obersdorf in Allgäu (ZMB), Sondershausen (ZMH). **Hessen:** Dillenburg (HW, WJP), Marburg (HW). **Niedersachsen:** Dörpen: 14 km SW Papenburg (VH), Norderney Island



FIGURE 8. *Trypoxylon medium*: geographic distribution.

(VH). **Nordrhein-Westfalen:** Krefeld (DEI), Plettenberg (including lectotype and 2 paralectotypes of *rubi*, HW, WJP), Siegen (HW). **Rheinland-Pfalz:** Bad Münster am Stein (KS), Mainz (KS).

Great Britain (53 ♀, 44 ♂, BMNH if not indicated otherwise): **Buckingham:** Slough. **Devon:** Bovey Tracey, Braunton. **Dorset:** Chideock, Wareham. **Gloucester:** Stroud (Rodborough). **Hampshire:** Basingstoke, Bramdean, Browdown, Fareham, Hurn, Stockbridge. **Isle of Wight:** Alum Bay, Sandown, St. Helen's. **Kent:** Cobham, Darenth, Pluckley (KMG). **London:** Mill Hill, Ruislip (KMG), Uxbridge. **Oxford:** Goring. **Surrey:** Chobham (KMG), Ewell (DBB), Horsell. **Sussex:** Findon, Midhurst (Ambersham Common), Singleton (The Trundle).

Greece (1 ♀, 1 ♂): **Crete:** Kato Metokhi (ZMB). **Peloponnesus:** Mega Spilaion (de Beaumont, 1965). **Stereia Ellas:** Kifissia (KMG).

Hungary (2 ♀, 1 ♂): **Pest:** Ocsa (TMB). **Tolna:** Simontornya (NHMV).

Iran (1 ♀): **Gorgan,** Shaskola Forest (JG).

Israel (3 ♀): **Baniass** (KMG). **Eshtaol:** Kesalon Valley (KMG).

Italy (19 ♀, 7 ♂): **Emilia-Romagna:** Modena; Zocca: Montecortore (NHMV). **Lazio** (Frosinone): Pontecorvo (NHMV). **Roma** (4 ♀, det. J. de Beaumont, WJP). **Liguria:** Genova (MSNM), San Remo (GP). **Lombardia** (Varese): Mercallo (MSNM). **Piemonte:** San Benedetto Belbo ca 20 km S Alba (GP). **Trentino-Alto Adige:** Bolzano (as Bozen, NHMV), Cavalese (BB), Merano (as Meran, ZSM), Predazzo (ZMB). **Veneto:** Colli Euganei: Montegrotto Terme (WJP), Garda (FSAG), Jesolo (FSAG), Lido di Venezia (de Beaumont, 1959). **Venezia Giulia:** Trieste (ZMH).

Netherlands (14 ♀, 10 ♂, RMHN if not indicated otherwise): **Drenthe:** Emmen, Exloo, Mantinge. **Gelderland:** Ede (GVR), Kootwijk, Hulshorst. **Limburg:** Heerlen. **Noord Brabant:** Griendtsveen, Helenaveen, Udenhout, Waalwijk. **Noord Holland:** Hilversum. **Utrecht:** den Dolder.

Norway (4 ♀, 5 ♂): **Hordaland:** Granvin (ZMUB). **Sogn og Fjordane:** Balestrand (ZMUB). **Sør-Trøndelag:** Osen district (FSAG).

Poland (1 ♂): **Szczecin:** Międzyzdroje (as Misdroy, ZMB).

Romania (9 ♀, 18 ♂, MGA if not indicated otherwise): **Brasov:** Uilac. **Bucaresti:** Valea Rosie near Oltenija. **Constanta:** Babadag (RMNH), Caraorman, Crișan, Gorgova in Danube Delta (HD), Periprava, Valu lui Traian. **Oradea:** Oradea (RMNH). **Ploesti:** Valea lui Bogdan near Sinaia.

Spain (1 ♀): Mallorca (DEI).

Sweden (22 ♀, 10 ♂, NRS): **Åsele Lappmark:** Saxnäs. **Bläkinge:** Ronneby. **Bohuslan:** Ljung. **Dalarna:** Falun. **Gotland:** Fardume, Färö, Stånga. **Hälsingsland:** Järvsö. **Jämtland:** Storlien. **Öland:** Högbys, Mörbylånga, Vickelby. **Skåne:** Ivö, Stenshuvud. **Småland:** Kalmar Sund (Blå Jungfrun). **Uppland:** Bogesund, Danderyd. **Västergötland:** Österplana hed. **Västmanland:** Skinnskatteberg.

Switzerland (20 ♀, 20 ♂, NHMB if not indicated otherwise): **Bern:** Bern, Biel. **Genève:** Bois d'Onex (MHNG), Genthod (NHMB, RMNH), Peney (MHNG). **Graubünden:** Chur (ZSM), Parc National Suisse (de Beaumont, 1958), Scans, Somvix. **Valais:** Binntal (15 km NE Brig), Grimentz (RMNH), Lötschental, Martigny (BMNH), Saar Fee (BMNH), Sierre (NHMV), Simplon (BMNH), Zermatt (RMNH). **Vaud:** Nyon (MHNG).

Syria (1 ♂): Damascus (NHMV).

Turkey (4 ♀, 9 ♂): **Amasya:** Amasya (BMNH). **Antakya:** Antakya (de Beaumont, 1967). **Antalya:** Antalya (BMNH), Finike

(de Beaumont, 1967). **Finike-Kaş** road (BMNH). **Bursa:** Uludağ (BMNH). **Kastamonu:** Kastamonu area (BMNH). **Mersin:** Gözne (BMNH), Mut (JG). **Mugla:** near Köyceğiz (BMNH), Marmaris (BMNH). **Samsun:** Samsun area (BMNH).

USSR: **Armenian SSR:** Novembryan (3 ♂, ZMMU). **Georgian SSR** (2 ♀, ZMMU): Leselidze, Yermolovskoye near Gagra. **Kazakh SSR** (7 ♀, 14 ♂, VLK if not indicated otherwise): Almaatinskaya oblast: 12 km W Alma Ata; Ili river 60 km E Ili (now Kaphagai); Kargalinka, 5 km SW Alma Ata; Malaya Almaatinka River in Zailiyskiy Alatau (ZMMU), 25 km S Turgen village in Zailiyskiy Alatau, Semipalatinskaya oblast: 30 km SE Georgyevka; Tarbagatai Khrebet foothills 6 km N Irinovka (which is 47°09'N, 81°53'E); 12 km N Zharm. Vostochnokazakhstanskaya oblast: Baighym Canyon in Narynkiy Khrebet; Kalbinskiy Khrebet 20 km SW Leninka; Kenderlik river 15 km E Zaysan; 5 km N Okiyabryski in Ulbinskiy Khrebet; 15 km NE Ust'-Kamenogorsk; 15 km SSW Ziry-anovsk; 28 km SSE Ziry-anovsk. **Russian SSR:** Bashkirskaia Avtonomnaya oblast: Kazmash (1 ♂, ZMMU). Belgorodskaya oblast: Valuyki (1 ♂, NHMV). Leningradskaya oblast: Primorsk (as Koivisto, 1 ♀, AKM). Saratovskaya oblast: Kuznetsk (1 ♀, ZMMU). **Ukrainian SSR:** Crimea (1 ♀, 2 ♂, ZMMU): Karadag, Sebastopol.

Yugoslavia (6 ♀, 1 ♂): **Croatia:** Porč (FSAG), Puli (as Pola, NHMV), Rab Island (as Arbe, TMB). **Kosovo:** Brezovica in Šar Mts. (TMB), Peč (TMB). **Serbia:** Draževac (FSAG), Šid (FSAG). **Slovenia:** Portorož (FIS).

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